Selected Abstracts from the July Issue of the European Journal of Vascular and Endovascular Surgery

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Separation of Components in Fenestrated and Branched Endovascular Grafting – Branch Protection or a Potentially New Mode of Failure?

Dowdall J.F., Greenberg R.K., West K., Moon M., Lu Q., Francis C., Pfaff K. Eur J Vasc Endovasc Surg 2008;36:2-9.

Objectives: Modular component separation following endovascular aortic repair is recognized as a potential source of late failure. The aim of this study was to establish the extent of component separation occurring in branched and fenestrated endografts and to ascertain any factors that predict its occurrence.

Design: An analysis of component relationships following fenestrated and branched endovascular aneurysm repair was conducted on all patients with >1 year of digital imaging data. A mathematical model was developed, and retrospectively applied, to determine the minimum stentgraft overlap required to preclude any risk of component separation.

Results: Of the 184 patients treated prior to 2006, data (for patients with greater than 1 year follow-up) were available for 106 patients. Fourteen (13%) had evidence of inter-component movement of which 8 developed component separation (<2 stent overlap). All 8 patients with component separation, in addition to 38% of the total cohort, were identified as being at risk for eventual component separation using the mathematical model.

Conclusions: Component movement is commonly observed in modular devices, but clinical consequences are rare. The degree of overlap, aneurysm diameter, aneurysm length, and stentgraft diameter can be used to predict the risk of inter-component movement which may result in component separation.

Prospective Randomized Study of Carotid Endarterectomy with Fluoropassiv™ Thin Wall Carotid Patch versus Venous Patch

Meerwaldt R., Lansink K.W.W., Blomme A.M., Fritschy W.M. Eur J Vasc Endovasc Surg 2008;36:45-52.

Introduction: The practice of carotid endarterectomy (CEA) with patch angioplasty is more effective compared to primary closure. However, the type of patch material remains a controversy. The Fluoropassiv™ thin wall carotid patch is a polyester patch with an interpenetrating, nanometer-scale, solvent-applied surface modification, based on a biocompatible fluoropolymer. The present pilot study is the first clinical trial evaluating results of CEA with Fluoropassiv™ versus venous patch.

Materials/Methods: Eighty-seven patients were randomized to 42 Fluoropassiv™ patching and 45 venous patching. Patients were observed by a vascular surgeon and a neurologist and scanned using duplex ultrasound with a follow-up of 2 years. No patients were lost to follow-up. Restenosis was defined as a Peak Systolic Velocity ratio >2.6, lumen reduction >50%.

Results: Perioperative stroke rate was 2.4% in the Fluoropassiv™ group and 8.9% in the venous group ($p = 0.02$; 1 regressive, 4 non-regressive strokes). Multivariate analysis showed that bilateral carotid stenosis and stroke as indication for CEA were related to perioperative stroke. There was no link between perioperative stroke and patch type after correction for these factors. Patch type had no influence on operation time, clamp time, cranial nerve damage, hypertension, hematoma, infections, time to discharge, or early thromboembolic events. There were no significant differences between the Fluoropassiv™ and the venous group for cumulative mortality (respectively 4.4 vs 4.8%), patch occlusion (4.8 vs 2.2%), or stroke rate during 2 year follow-up (2.2 vs 2.4%).

Conclusion: This first clinical study with the Fluoropassiv™ thin wall carotid patch showed no enhanced thrombogenicity compared to a venous patch. The Fluoropassiv™ patch is not related to a higher rate of postoperative bleeding events either.

Combined PET-FDG and USPIO-Enhanced MR Imaging in Patients with Symptomatic Moderate Carotid Artery Stenosis

Tang T.Y., Moustafa R.R., Howarth S.P., Walsh S.R., Boyle J.R., Li Z.Y., Baron J.-C., Gillard J.H., Warburton E.A. Eur J Vasc Endovasc Surg 2008;36:53-5.

Introduction: PET-FDG and USPIO-enhanced MRI are increasingly being used in depicting carotid atheroma inflammation – a risk factor for the high risk plaque. Their combined use has not been previously reported.

Report: Two patients presenting with stroke and identified with 50% carotid stenosis on duplex ultrasonography, underwent PET FDG and USPIO-enhanced MR imaging. Results were concordant and complementary suggesting that both techniques reflect similar metabolic processes.

Discussion: The selection of patients for carotid revascularisation has largely been based on the severity of luminal stenosis alone. The two imaging modalities, which identify inflammatory activity, may be potential surrogate risk markers in the selection of patients eligible for carotid surgery, if plaque inflammation can be correlated with risk of developing clinical symptoms.

Surgical and Endovascular Management of Penetrating Innominate Artery Injuries

du Toit D.F., Odendaal W., Lambrechts A., Warren B.L. Eur J Vasc Endovasc Surg 2008;36:56-62.

Objective: To review our management of penetrating innominate artery injuries by open and endovascular techniques.

Methods: Data regarding patient demography, clinical presentation, investigations, associated injuries, pathology, management, complications and mortality, were collected on patients treated at a single centre over 18 years.

Results: 39 innominate artery injuries were treated. There were 36 men and three women, with a mean age of 27 years (range 18–49).Thirty-eight injuries were due to stabwounds and one was the result of a gunshot wound. The most common clinical presentations were shock (47%) and haematoma(42%). Twenty-three patients had associated injuries. The most common pathology was false aneurysm in 21 patients followed by 13 actively bleeding injuries, 4 arteriovenous fistulas and 1 arterial occlusion. Thirty-four patients underwent surgical and five endovascular repair. Overall survival was 79%. The stroke rate for surviving patients was 6%. Patients treated with endovascular stenting had shorter hospital and intensive care unit stays than those treated with surgery.

Conclusions: Innominate artery injuries have high rates of morbidity and mortality. A vascular surgical approach with pre-operative angiography, when possible and careful surgical planning by a dedicated team promotes better surgical results. Endovascular and hybrid procedures can become the method of choice when treating stable patients.

Prospective 2-Years Follow-up Quality of Life Study after Infrageniculate Bypass Surgery for Limb Salvage: Lasting Improvements Only in Non-Diabetic Patients

Engelhardt M., Bruijnen H., Scharmer C., Wohlgemuth W.A., Willy C., Wölfle K.D. Eur J Vasc Endovasc Surg 2008;36:63-70.

Objectives: To assess health-related quality of life (HRQoL) up to 24 months after successful infrageniculate bypass surgery for limb-threatening ischaemia.

Methods: 89 patients with infrageniculate bypass surgery for limb-salvage were studied. HRQoL was assessed using the Short Form (SF)-36v1 questionnaire before, 6, 12, and 24 months after revascularisation.

Results: 47 patients (53%) with intact limb and functioning graft were assessed after 24 months, 27 patients (30%) died, further 7 required secondary amputation, 3 suffered irremediable graft occlusion, and 4 were lost to follow-up. The 24-months HRQoL-values were significantly improved in 4 domains: physical functioning ($p < 0.01$), bodily pain ($p < 0.01$), mental health ($p = 0.04$), and social functioning ($p = 0.01$). Except for baseline-values, HRQoL remained inferior in diabetics compared to non-diabetics throughout follow-up. Maximum improvement of HRQoL was delayed in diabetics (12 months vs. 6 months) and less pronounced. After 24 months non-diabetic patients maintained improvement in 5 domains and diabetic patients only in bodily pain.

Conclusions: Improvement in HRQoL is sustained for more than 12 months after successful infrageniculate bypass surgery. Therefore, an aggressive approach towards revascularisation seems to be justified from the patient's perspective. However, this benefit in quality of life is less in diabetic patients, despite similar limb-salvage rates.

Endovascular and Open Approaches to Non-thrombosed Popliteal Aneurysm Repair: A Meta-analysis

Lovegrove R.E., Javid M., Magee T.R., Galland R.B. Eur J Vasc Endovasc Surg 2008;36:96-100.

Objective: Endovascular repair of popliteal artery aneurysms is a relatively new technique that is still undergoing evaluation. The aim of this study was to compare outcomes following open and endovascular approaches.

Methods: All published studies comparing outcomes following open and endovascular popliteal aneurysm were included. Endpoints included operative duration, length of stay, and postoperative complications including short-term patency rates. Outcomes were combined using a random-effects meta-analytical technique and differences assessed using odds ratios (OR), weighted mean difference (WMD) and log hazards ratio (HR).

Results: Three studies comprising 141 patients (37 endovascular; 104 open) were included. No significant differences in patient characteristics were seen. Operative duration was significantly longer for endovascular repair (WMD 120 minutes, $p < 0.001$). Thirty day graft thrombosis (OR 5.05, $p = 0.06$) and reintervention (OR 18.80, $p = 0.03$) were more likely following endovascular repairs. Postoperative length of stay was shorter in the endovascular group (WMD – 3.9 days, $p < 0.001$). There was no significant difference in long-term primary patency rates (HR 1.70, $p = 0.53$).

Conclusions: Endovascular repair of popliteal artery aneurysms offers similar medium-term benefits as an open repair. However, short-term graft thrombosis and reintervention rates are significantly greater. With the current technology it is difficult to justify endovascular treatment of popliteal aneurysms.

Comparison of Results of Subintimal Angioplasty and Percutaneous Transluminal Angioplasty in Superficial Femoral Artery Occlusions

Antusevas A., Aleksynas N., Kaupas R.S., Inciura D., Kinduris S. Eur J Vasc Endovasc Surg 2008;36:101-6.

Objectives: To report results of subintimal angioplasty (SA) of superficial femoral artery occlusions and to compare these results with percutaneous transluminal angioplasty (PTA) of similar lesions.

Design: Prospective study.

Patients: In the period from June 2002 to August 2006, 73 SA procedures were performed in 71 patients and 75 PTA procedures were performed in 75 patients.

Methods: All cases treated with SA or PTA for superficial femoral artery occlusions were prospectively registered and reviewed. Assessments of comorbidities, indication for procedure, run-off, occlusion length, calcification of the artery and graft patency were recorded.

Results: The technical success rate of SA was 87.7% versus 81.3% for PTA. Primary patency rates in the SA group at 1, 6, 12, 24 months were respectively 84.9 ± 4.2, 71.2 ± 5.1, 68.5 ± 5.3 and 65.8 ± 5.2%; in the PTA group – 81.3 ± 4.4, 45.3 ± 5.7, 42.7 ± 5.6 and 38.7 ± 5.5% respectively. At the same time-points primary assisted patency rates were in SA group 84.9 ± 4.2, 83.6 ± 4.2, 71.2 ± 5.2 and 68.5 ± 5.3%; and in the PTA group 81.3 ± 4.4, 62.5 ± 5.5, 44 ± 5.6 and 42.7 ± 5.6%. Calcification was associated with SA failure. There were no amputations in the follow up of either SA or PTA procedures.

Conclusion: Results from subintimal angioplasty of superficial femoral artery occlusions was superior to the results of PTA.

Mid Term Results of Ultrasound Guided Foam Sclerotherapy for Complicated and Uncomplicated Varicose Veins

O'Hare J.L., Parkin D., Vandenbroeck C.P., Earnshaw J.J. Eur J Vasc Endovasc Surg 2008;36:109-13.

Objective: The aim was to describe the results of starting a foam sclerotherapy service, focussing on patients with complicated venous disease.

Methods: Consecutive patients undergoing ultrasound-guided foam sclerotherapy for truncal varicose veins underwent clinical and hand-held Doppler assessment at 2 weeks and venous duplex imaging at 6 months.

Results: One hundred and eighty-five truncal veins were treated in 165 patients. A high proportion of veins were complicated (109 CEAP classes 4–6, 76 CEAP 1–3). Ninety-one percent (168) had a single treatment session. After 2 weeks, ninety-three percent (136/147) of the truncal veins appeared occluded on hand-held Doppler examination. Ten percent (15/147) of patients had remaining visible varicosities in the lower leg. After six months, the truncal vein remained occluded in 74% (68/92), was partially occluded in 10% (9/92) and fully patent in 16% (15/92). There was no significant difference in occlusion rates between: primary (45/60–75%) and recurrent (23/32–72%) veins; CEAP 2–3 (22/30–73%) and CEAP 4–6 (46/62–74%) veins; veins with diameter < 7 mm (29/38–76%) or ≥7 mm (13/23–57%). No patient had evidence of deep vein thrombosis, though nine (10%) had new segmental deep venous reflux compared with pre-treatment scans.

Conclusion: Foam sclerotherapy was equally effective for complicated and uncomplicated varicose veins.